REMARKS

Status of the Claims

Claims 1-47 are now pending. Claims 1 and 44-46 have been amended to more distinctly point out and claim that which Applicants regard as their invention. Support for these amendments can be found, for example, on page 3, line 11, and the examples at pages 20-23 of the specification. New claim 47 has been added. Support for claim 47 can be found in original claims 1, 2, 3, 10 and 15, and in the specification at page 3, line 11, and the examples at pages 20-23. . No new matter has been added by the new claim or by the claim amendments.

Examiner Interview

Applicants thank the Examiner and her Supervisor for conducting a personal interview with Applicants' representatives on March 18, 2004.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claim 26 has been rejected under 35 U.S.C. § 112, second paragraph, as allegedly being "vague and indefinite [because] it is not clear how the compound depicted in formula (II) can depend from those generic formulas recited in claim 1." Office Action, p. 2. The radical in question, R', is represented in claim 1 as $-C_qH_{2q}L$. The bivalent radical $-C_qH_{2q}-$ is not limited to the linear configuration as implied by the rejection, but rather includes branched structures because the relationship between the number of carbons and hydrogens is the same for linear or branched configurations.

Applicants gratefully acknowledge that during the Interview, the Examiner agreed to withdraw this rejection. Interview Summary dated March 18, 2004.

Rejections Under 35 U.S.C. § 103

Decoster '747

Claims 1-32, 34-41, and 43-46 are rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Decoster (U.S. Pat. No. 6,451,747) ("Decoster '747") for the reasons given on pages 3-5 of the outstanding Office Action. Decoster '747 does not qualify as a 102-type art because Applicants' foreign priority date precedes the § 371(c)(1), (2) and (4) date given on Decoster '747, and the French language PCT, of which Decoster '747 is the national stage entry, was filed before Nov. 29, 2000. M.P.E.P. § 706.02(f)(1). Nonetheless, Applicants assume the Examiner is using the Decoster '747 as an equivalent to the corresponding French language PCT. Applicants respectfully request clarification on the record regarding this issue if Appliant's assumption is incorrect.

As an initial matter, Applicants respectfully submit that there are several factual errors in the Office Action regarding both Applicants' claims and the Decoster '747 teachings, which Applicants want to clarify for the record. First, Applicants' claimed ratio of amphoteric to anionic surfactant is recited in the Office Action to be greater than or equal to 0.1:1, whereas Applicants' actual claimed ratio is greater than or equal to 0.2:1. Office Action, p. 3. Second, Applicants' claimed amine number of the aminated silicone polymer is recited in the Office Action as greater than or equal to 0.5 meq/g, whereas Applicants' actual claimed amine number is greater than or equal to 0.4 meq/g.

Id. The third error is the Examiner's recitation of an exemplification in Decoster '747 that Applicants could not find. Specifically, the Office Action recites, "Exemplified is a composition comprising 14g laurelethersulfate of sodium ... wherein the ratio of amphoteric/anionic surfactant is 0.3:1." *Id.* Applicants respectfully submit that this exemplification is not present in Decoster '747, and, as such, none of the limitations recited in this sentence can be properly used in this rejection.

The Examiner admits that Decoster '747 does not recite the instantly claimed amine number of the aminated silicones, or the amount of solvent set forth, for example, in claim 43. Office Action, p. 4. The Examiner attempts to cure these deficiencies by arguing that the aminated silicones are taught by Decoster '747 as interchangeable, and that the solvent amount would have obvious to optimize, respectively. *Id.* Applicants respectfully disagree.

To establish a *prima facie* case of obviousness, an Examiner must satisfy three basic criteria. First, there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. Finally, the prior art reference must teach or suggest all the claim limitations. See, e.g., M.P.E.P. § 2143. Here, the Examiner has not shown that (a) the instantly claimed ratio of amphoteric to anionic surfactant, (b) the instantly claimed amine number of the aminated silicones, or (c) the amount of solvent, has been taught or suggested, nor that there is sufficient evidence to suggest or motivate a modification of the reference.

For the instantly claimed ratio of amphoteric to anionic surfactant, the Examiner recites an exemplification which Applicants cannot find in Decoster '747, as described

above. Since no other evidence of this ratio is taught or suggested, this limitation has not been met. Similarly, the unfound exemplification in Decoster '747 is used to teach the amine number, and, thus, the production of evidence remains deficient for the teaching of this limitation as well. Even if the Examiner relies on the Decoster '747 teachings of monomerically-similar aminosilicones, the Examiner has provided no evidence or explicit teaching of the instantly claimed amine number which, in part, defines the relative amounts of the monomeric components of the polymer. For this reason alone this limitation is not met.

To support the rejection, the Examiner asserts that Decoster '747 teaches that the aminosilicones are "interchangeable." Office Action, p. 4. However, Applicants respectfully submit that this amounts to improper picking and choosing among the amine numbers without any reason given by the Examiner for guidance on which amine numbers to choose. A convincing line of reasoning must be presented as to why one of ordinary skill in the art would pick and choose various elements and/or concepts from the prior art to arrive at the claimed invention. See e.g., *Ex parte Clapp*, 227 USPQ 972 (Bd. Pat. App. & Inter. 1985); *In re Wesslau*, 147 USPQ 391 (Bd. Pat. App. & Inter. 1965); M.P.E.P. § 2144. Here, no such line of reasoning for choosing the instantly claimed amine number is presented, and as such, the rejection is improper.

Next, the Examiner asserts that the instantly claimed solvent amount (see e.g., claim 43) would have been obvious because "discovering the optimum or workable ranges involves only routine skill in the art," citing *In re Aller*. Office Action, p. 4. Further, the Examiner states that solvent amounts are singularly determinative of the compositions form. *Id.* The Examiner's reliance on *In re Aller* to support the rejection is

misplaced because (a) the solvent amount has not been properly identified as a result-effective variable, and (b) Applicants have at least three parameters that had to be correctly chosen (i.e., the aminated polymer, its amine number, and the solvent amount), not just two as in *In re Aller*. Thus, Applicants respectfully submit that the Examiner's statements, as well as the reliance on *In re Aller*, are flawed for several reasons.

First, even if the claimed limitations are within the capabilities of one skilled in the art, such capabilities, by themselves, are not sufficient to establish a *prima facie* case of obviousness. *In re Kotzab*, 217 F.3d 1365 (Fed. Cir. 2000); M.P.E.P. § 2143.01. Second, the Examiner has provided no evidence that solvents are singularly determinative of the composition's form; it is simply asserted. Thus, it has not been demonstrated that solvent amount by itself and without considering the concentrations of the other ingredients (e.g., water amount or polymer amount) can alter the composition's form. For example, one could increase the solvent amount but the change in viscosity could be offset by either (or both) a change in water amount or polymer amount; one must take into account all the variables, not simply the solvent amount.

Further, since no evidence has been presented that one of ordinary skill in the art would know *a priori* whether the addition of an undetermined solvent would thicken or thin the composition, it has not been shown that this parameter (the solvent amount) achieves a recognized result and thus it cannot be properly argued that it is a result effective variable. See *In re Antonie*, 559 F.2d 618 (C.C.P.A. 1977); M.P.E.P. § 2144.05.II.B. At best, modifying the solvent amount would be obvious to try, but

"obvious to try" does not establish a *prima facie* case of obviousness. *In re O'Farrell*, 853 F.2d 894, 903 (Fed. Cir. 1988); M.P.E.P. § 2145 X.B.

Even assuming, arguendo, that the solvent amount is a result effective parameter, a *prima facie* case of obviousness still has not been established because the prior art reference must be examined in its entirety. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984); M.P.E.P. § 2141.02. The Examiner admits that Decoster '747 only teaches amounts outside Applicants' claimed range, and has not pointed to any suggestion in the references to deviate from these teachings. Thus, this teaches away from instantly claimed solvent amount.

Finally, Applicants find no support in Decoster '747 for the newly added limitation of a transparent composition. Although the claim-listed ingredients must be individually transparent, this individual transparency is necessary but not sufficient to meet the newly added limitation. Since the composition as a whole must be transparent, there must be no ingredient interactions or additional ingredients that cause non-transparency. Transparency of all components must be achieved simultaneously to form a transparent composition. Yet, none of the explicit recitations of compositions and singly-listed aminated silicones in Decoster '747 are transparent. Specifically, DC939 and Q2 7224 are the only aminated silicones mentioned explicitly or used in the examples, and both are non-transparent. See Applicants' specification p. 23, and attached Dow Corning literature for the 7224 product (stating color as milky white). The Federal Circuit has held that where a species of a prior art genus is claimed, the disclosure of dissimilar teaching can provide a teaching away. See *In re Baird* 16 F.3d

380 (Fed. Cir. 1994); M.P.E.P. § 2144.08 II.A.4(c). Here, there is a teaching away because the only specific teachings in Decoster '747 are non-transparent, whereas the present claims are drawn to transparent compositions. Applicants note that the Examiner cites nothing in Decoster '747 that shows a desire for or concern with transparency, and simply because the claimed limitations are within the capabilities of one skilled in the art is not sufficient to establish a *prima facie* case of obviousness. *In re Kotzab*, 217 F.3d 1365 (Fed. Cir. 2000); M.P.E.P. § 2143.01. Simply because references can be modified or combined is not sufficient basis to establish a *prima facie* case of obvious. *In re Mills*, 916 F.2d 680 (Fed. Cir. 1990); M.P.E.P. § 2143.01.

Regarding new claim 47, Applicants respectfully submit that the motivation for choosing the amino silicone subgenus of claim 47 from the cited references is absent, as is the motivation to simultaneously use an amount of the washing base in the claimed range with its surfactants in the claimed ratio. Further, the fact that a claimed subgenus is encompassed by the prior art is not sufficient by itself to establish a prima facie case of obviousness. *In re Baird*, 16 F.3d 380 (Fed. Cir. 1994); M.P.E.P. 2144.08.II. And as mentioned above, neither the fact that the claimed limitations may be within one of ordinary skill in the art, nor that references can be modified, are sufficient to establish a prima-facie case of obviousness. *In re Kotzab*, 217 F.3d 1365 (Fed. Cir. 2000); *In re Mills*, 916 F.2d 680 (Fed. Cir. 1990); M.P.E.P. § 2143.01.

For the aforementioned reasons, at least, Applicants respectfully request withdrawal of this rejection.

Decoster '747 further in view of Naito

Next, claims 33 and 42 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Decoster '747, and further in view of Naito at el. (U.S. Pat. No. 5,476,649) ("Naito"). Office Action, p. 5. The Examiner admits that Decoster '747 lacks a teaching or suggestion of 18-methyl-eicosanoic acid and polyalkylene glycols. *Id.* The Examiner attempts to remedy these deficiencies by citing Naito's teachings.

For at least the reasons discussed above with respect to Decoster '747 alone, Applicants respectfully submit that Decoster '747 is deficient, and that this rejection should be withdrawn for at least this reason. The Examiner states that polyalkylene glycols are taught in Naito and cites as motivation to incorporate the teachings of Naito into Decoster '747 that "[p]olyalkylene glycols are taught [to] impart moisturization and flexibility to the hair." Office Action, p. 5. It is not stated where polyalkylene glycols are mentioned in Naito, nor where this motivation can be found. However, when providing motivation to combine references, only objective evidence and specific factual findings can be relied upon. *See In re Lee*, 277 F.3d 1338 (Fed. Cir. 2002); M.P.E.P. § 2143.01. Since no evidence or specific factual findings for either the limitation or the motivation are provided, Applicants respectfully submit that this rejection should be withdrawn for at least this reason.

Regarding the 18-methyl-eicosanoic acid, the Examiner has selected a single species from a exceedingly broad genus. According to Naito, the fatty acid formula (1) provides chemical variations that exceed 10,000 chemicals. The Examiner has provided no evidence or teaching as to why Applicants' claimed single fatty acid would

be chosen from such a broad genus. At best, this amounts to picking and choosing limitations from the prior art, which, of course, is not sufficient to establish a *prima facie* case of obviousness, as described above. Further, there is no evidence that Naito desired a transparent product or even considered whether transparency occurred in its compositions. In fact, Naito explicitly mentions DC929, which is opaque, as a aminated silicone, thus again teaching away from a transparent composition. Col. 12 lines 29-32.

For the aforementioned reasons, at least, Applicants respectfully request withdrawal of this rejection.

Decoster '211 in view of Hughes

Claims 1-32, 34-41, and 43-46 are rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Decoster (English translation of WO 97/46211) ("Decoster '211") in view of Hughes (U.S. Pat. No. 5,567,428) ("Hughes") for the reasons set forth on pages 6-7 of the Office Action. Applicants note that in this rejection the Office Action recites the same errors regarding Applicants' claims as discussed above at pp. 18-19, i.e., the claimed ratio of amphoteric to anionic solvent and amine number of the aminated silicone polymer are both misstated. Office Action, p. 6.

Applicants also note that the amine number cited in the example of Decoster '211 is incorrect. The Decoster '211 example states that the amine number (i.e., amine index) is 0.5 for the aminated silicone SF 1921 (made by General Electric). See translation at pp. 30-31. In fact the amine number is 0.15, as shown in GE's product literature for SF 1921 (copy attached herewith for the Examiner's convenience).

The Examiner admits that Decoster '211 does not teach the instantly claimed aminated silicone or the solvent amount. It is alleged that Hughes teaches the instantly claimed aminated silicone, asserting that substituting Hughes silicone for Decoster's allegedly would have been obvious (a) because "of the expectation of ... imparting styling holding benefits that do not leave the hair feeling stiff," and (b) "that the substitution of one aminated silicone for another is obvious and within the skill of the artisan." Office Action, p. 7. Regarding quote (a), Applicants respectfully submit that the Hughes adhesive polymer provides the stated "holding" and "fasting" properties, not the aminated silicone. Hughes col. 1, lines 31-36. Thus, the Examiner has not recited a function for the aminated silicones in Hughes. Also, the Office Action recites no teaching in Decoster '211 as to its purpose for using an aminated silicone. Without such evidence, functional equivalence (allegedly for "holding" and "feeling") cannot be determined for the instantly claimed aminated silicone, especially considering that the only amine number mentioned in Decoster '211 does not fall within Applicants' claimed amine number. *See In re Lee*, 277 F.3d 1338 (Fed. Cir. 2002); M.P.E.P. § 2143.01. Further, all the limitations in the instant claims have not been found because the amine number limitation has not been met.

Regarding quote (b), Applicants respectfully submit that the Examiner's assertion that one aminated silicone can be substituted for another is improper. The Examiner appears to be relying on substituting equivalents known for the same purpose, but such equivalency must be recognized in the prior art, and cannot be based on that fact that members are part of the same Markush group. *See In re Ruff*, 256 F.2d 590 (C.C.P.A. 1958); M.P.E.P. § 2144.06. Applicants inquire as to whether the Examiner is

taking implied official notice. However, since this official notice is not clear and unmistakable, it is improper for at least this reason. *See* M.P.E.P. § 2144.03 B. Further if the Examiner is taking official notice, Applicants hereby traverse the Examiner's finding because there is no evidence that the instantly claimed amine number aminated silicones behave equivalently to those that are less than 0.4 meq/g.

Regarding the solvent amount, Applicants respectfully submit that the Examiner is again improperly relying on the holding in *In re Aller* to motivate the choice of solvent amount. Office Action, p. 7. As above, however, *In re Aller* is insufficient to provide motivation because (a) the solvent amount has not been properly identified as a result effective variable, and (b) Applicants have at least three parameters that need to be correctly chosen (i.e., the aminated polymer, its amine number, and the solvent amount), not just the two as in *In re Aller.* Here, again, not all the limitations are met because the amine number is not specified. For at least these reasons, Applicants respectfully submit that this rejection should be withdrawn.

Finally, Applicants find no explicit support in Decoster '211 or Hughes for the newly added limitation for transparency. Although the claim-listed ingredients must be individually transparent, this individual transparency is necessary but not sufficient to meet the newly added limitation. Since the composition as a whole must be transparent, there must be no ingredient interactions or additional ingredients that cause non-transparency. Transparency of all components must be achieved simultaneously to form a transparent composition. Indeed, all explicit recitations of compositions and singly-listed aminated silicones in Decoster '211 and Hughes do not require transparency. See Decoster '211 translation at pp. 5, 27, 30 and 31; Hughes

col. 13, 14, and 30-37. Specifically, DC939 is not transparent and Q2 8220 may be non-transparent. See Applicants' specification p. 23, and attached Dow corning literature for the Q2 8220 product (stating color as clear to light hazy). Further the amodimethicones and trimethylsilylamodimethicones mentioned in Hughes at columns 13 and 14 can be either transparent or non-transparent. See Applicant's disclosure pp. 22-23. The examples in Hughes do not describe the final compositions as transparent. Hughes col. 30-37. The Federal Circuit has held that where a species of a prior art genus is claimed, disclosure of dissimilar teaching can provide a teaching away. See *In re Baird* 16 F.3d 380 (Fed. Cir. 1994); M.P.E.P. § 2144.08 II.A.4(c). Here, there is a teaching away because the specific teachings in Decoster '211 and Hughes are likely non-transparent compositions, whereas the present claims are drawn solely to transparent compositions. Also, there is no mention or discussion in Decoster '211 or Hughes that shows a desire for or concern with transparency, and simply because the claimed limitations are within the capabilities of one skilled in the art is not sufficient to establish a *prima facie* case of obviousness. *In re Kotzab*, 217 F.3d 1365 (Fed. Cir. 2000); M.P.E.P. § 2143.01. Further, Applicants note that simply because references can be modified or combined is not sufficient to establish a *prima facie* case of obvious. *In re Mills*, 916 F.2d 680 (Fed. Cir. 1990); M.P.E.P. § 2143.01.

Regarding new claim 47, Applicants respectfully submit that the motivation for choosing the amino silicone subgenus from the cited references is absent, as is the motivation to simultaneously use an amount of the washing base in the claimed range with its surfactants in the claimed ratio. Further, the fact that a claimed subgenus is encompassed by the prior art is not sufficient by itself to establish a prima facie case of

obviousness. *In re Baird*, 16 F.3d 380 (Fed. Cir. 1994); M.P.E.P. 2144.08.II. And as mentioned above, neither the fact that the claimed limitations may be within one of ordinary skill in the art, nor that references can be modified, are sufficient to establish a prima-facie case of obviousness. *In re Kotzab*, 217 F.3d 1365 (Fed. Cir. 2000); *In re Mills*, 916 F.2d 680 (Fed. Cir. 1990); M.P.E.P. § 2143.01.

For the aforementioned reasons, at least, Applicants respectfully request withdrawal of this rejection.

Decoster '211 in view of Hughes further in view of Naito

Finally, claims 33 and 42 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Decoster '211 in view of Hughes further in view of Naito. Office Action, p. 8. The Examiner admits that Decoster '211 and Hughes lack a teaching or suggestion of 18-methyl-eicosanoic acid and polyalkylene glycols. *Id.* The Examiner attempts to remedy these deficiencies by citing Naito's teachings. *Id.*

For at least the reasons discussed above, Applicants respectfully submit that Decoster '211 in view of Hughes is deficient, and that this rejection should be withdrawn for at least this reason. The Examiner states that polyalkylene glycols are taught in Naito and cites as motivation to incorporate the teachings of Naito into Decoster '211 and Hughes that "[p]olyalkylene glycols are taught [to] impart moisturization and flexibility to the hair." *Id.* Yet, Applicants can find no mention of polyalkylene glycols in Naito, nor can any motivation be found. Objective evidence and specific factual findings must be relied upon when providing motivation to combine references. *See In re Lee*, 277 F.3d 1338 (Fed. Cir. 2002); M.P.E.P. § 2143.01. Since neither can be found

here, Applicants respectfully request that this rejection be withdrawn for at least this reason.

Regarding the 18-methyl-eicosanoic acid, the Examiner has selected a single species from a exceedingly broad genus. Naito's fatty acid formula (1) provides chemical variations that exceed at least 10,000 chemicals. No evidence or teaching has been provided as to why Applicants' claimed single fatty acid would be chosen from such a broad genus. At best this amounts to picking and choosing limitations from the prior art, and thus is not sufficient to establish a *prima facie* case of obviousness, as described above.

For the aforementioned reasons, at least, Applicants respectfully request withdrawal of this rejection.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: **May 4, 2004**

By: Thalia V. Warnement, Reg No. 39,064
for Michelle E. O'Brien
Michelle E. O'Brien
Reg. No. 46,203

Attachments:

GE Silicone product literature for SF1921 aminated silicone
Dow Corning Product Literature for 7224 aminated silicone
Dow Corning Product Literature for Q2 8220 aminated silicone

GE Silicones

SF1921

Amino Functional Silicone Fluid

Product Description SF1921 is a non-curable amino functional silicone fluid designed to impart excellent softness to a variety of fabrics.

Key Performance Properties

- Good affinity to fabrics
- Easy to formulate
- Imparts durable softness to many fabrics

Typical Product Data

Property	Value
Silicone Content, %	100
Viscosity, cstks @ 25°C (77°F)	200-500
Specific Gravity @ 25°C (77°F)	0.97
Color, Gardner	< 1
Equivalent Weight (grams of SF1921 required to neutralize one equivalent of HCl)	6666
Amine Equivalent (milliequivalents of base/gram)	0.15

Instructions for Use

SF1921 fluid is suggested for use as a textile finishing agent where durable softness is desired. Because the textile industry almost exclusively employs aqueous application techniques, SF1921, a water insoluble material, must be emulsified. The emulsified fluid may be added to other textile finishing agents as required and diluted as necessary. Once properly formulated, SF1921 can be applied as a finish by itself or in combination with other finishing agents such as durable press resins. It may be applied either by padding techniques or by exhaustion.

EMULSIFICATION INSTRUCTIONS

20% Silicone Microemulsi n

1. Blend the following ingredients using an overhead stirrer and heat to 60°C.

   20.0 parts SF1921 with 12.5 parts Tergitol TMN-6 (Union Carbide)

2. Slowly add 20 parts of water while heating to 70-75°C and agitating well.
3. Slowly add 0.5 parts of acetic acid this will clear and thicken the emulsion. Agitate well for 5-10 minutes to insure homogeneity.
4. Quickly add 47 parts water (part two water) with good agitation. Note: if desired, biocides may be added in this step.
5. Filter the emulsion to remove any dirt or undissolved gel particles. Fine filtration is not required.

ATTENTION: NOT FOR INJECTION INTO HUMANS

Handling and Safety Material Safety Data Sheets are available upon request from GE Silicones. Similar information for solvents and other chemicals used with GE products should be obtained from your suppliers. When solvents are used, proper safety precautions must be observed.

Storage and Warranty Period The warranty period is 12 months from date of shipment from GE Silicones if stored in the original unopened container at 25°C (77°F).

Availability SF1921 may be ordered from GE Silicones, Waterford, New York 12188, the GE Silicones sales office nearest you or an authorized GE Silicones' product distributor.

Government Requirement Prior to considering use of a GE Silicones product in fulfilling any Government requirement, please contact the Government and Trade Compliance office at 413-448-4624.

CDS4807

Product Information

DOW CORNING

DOW CORNING® 7224 Conditioning agent

FEATURES

- Effective at low addition levels

BENEFITS

- Substantive conditioning
- Gives improved wet and dry combing

INCI Name: Amodimethicone (and) Octoxynol-40 (and) Isolaureth-6 (and) Propylene Glycol

APPLICATIONS

- DOW CORNING 7224 Conditioning Agent has been specifically designed for hair care applications to provide excellent substantivity and good wet and dry combing.

TYPICAL PROPERTIES

Specification writers: These values are not intended for use in preparing specifications. Please contact your local Dow Corning sales representative prior to writing specifications on this product.

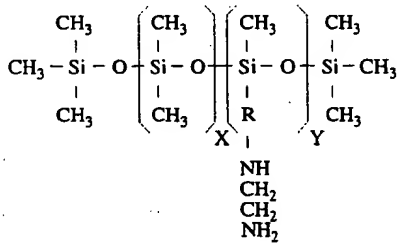
Parameter	Unit	Value
Silicone content	%	35
Color		Milky white
Viscosity	mm^2/s	200
Freeze/thaw stability	cycles	>5
pH		10.5
Suitable diluent		Water
Emulsifier type		Non ionic

DESCRIPTION

DOW CORNING 7224 Conditioning Agent is a 35% nonionic emulsion of an amine functional silicone polymer. The highly basic nature of the primary amine groups (pKb=10.7) causes this silicone polymer to develop a net positive charge in aqueous systems over a wide pH range (approximately pH 1-11.5).

Consequently DOW CORNING 7224 Conditioning Agent is very substantive to hair and brings about a dramatic improvement in both wet and dry combing, when applied from a dilute (0.5-2%) aqueous dispersion.

Figure 1: Chemical formula for DOW CORNING 7224 Conditioning Agent.



HOW TO USE

Cream rinses and conditioners can be prepared by emulsifying DOW CORNING 7224 Conditioning Agent in water and a suitable thickening agent. DOW CORNING 7224 Conditioning Agent is compatible with a variety of typical hair care formulation ingredients, including quaternary ammonium salts.

Because of the positively charged

nature of the silicone polymer, DOW CORNING 7224 Conditioning

Agent is not compatible with anionic surfactants.

See Table 2.

DOW CORNING 7224 Conditioning Agent may be incorporated into the aqueous phase of any personal care product, although it is common to add the product at 70°C or below.

DOW CORNING 7224 Conditioning Agent should not be used in applications were aerosols can be generated.

Compatibility

DOW CORNING 7224 Conditioning Agent is compatible with a wide variety of cosmetic ingredients. These are indicated in Tables 1 & 2. DOW CORNING 7224 Conditioning Agent is stable over a wide pH range and is recommended for use at a pH range from 3 to 11. See Table 3.

HANDLING PRECAUTIONS

Avoid skin and eye contact with neat material.

Do not breathe spray or mist.

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE FROM YOUR LOCAL DOW CORNING SALES REPRESENTATIVE.

USABLE LIFE AND STORAGE

When stored at or below 32°C in the original unopened containers, this product has a usable life of 18 months from the date of production.

If the product should freeze, simply allow to thaw at room temperature and mix well before use.

PACKAGING

This product is supplied in 18.1kg pails and 200kg drums. All weights net.

Free samples of 0.453kg are available.

CAUTION: Containers will have product residues when emptied, follow precautions recommended for handling these products when disposing of the container. Containers are not intended for re-use.

LIMITATIONS

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

HEALTH AND ENVIRONMENTAL INFORMATION

To support customers in their product safety needs, Dow Corning has an extensive Product Stewardship organization and a team of Health, Environment and Regulatory Affairs specialists available in each area.

For further information, please consult your local Dow Corning representative.

WARRANTY INFORMATION - PLEASE READ CAREFULLY

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that Dow Corning's products are safe, effective, and fully satisfactory for the intended end use. Dow Corning's sole warranty is that the product will meet the Dow Corning sales specifications in effect at the time of shipment. Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted. Dow Corning specifically disclaims any other express or implied warranty of fitness for a particular purpose or merchantability. Unless Dow Corning provides you with a specific, duly signed endorsement of fitness for use, Dow Corning disclaims liability for any incidental or consequential damages. Suggestions of use shall not be taken as inducements to infringe any patent.

COMPATIBILITY

Table 1: Compatibility of DOW CORNING 7224 Conditioning Agent with common hair-care ingredients.

Type of material	DOW CORNING 7224 Conditioning Agent
2% DOW CORNING 7224 Conditioning Agent dilution (at 40°C).	
Test ingredients and concentrations:	
Water	C
Sodium lauryl ether sulphate (2.8%)	I
Sodium lauryl ether sulphate (6.8%)	I
Sodium chloride (10% solution)	I
Coconut imidazoline amphoteric (20%)	I
Triethanolamine/ Ammonium lauryl sulphate (3.3%)	I
Ammonium lauryl sulphate (30%)	I
Croquat quanternary cationic polypeptide (1%)	I
Coconut diethanolamide (3%)	C
Linoleic diethanolamide (3%)	C
Isopropyl alcohol (10%)	C (room temp)
Ethanol (10%)	C (room temp)

C = Compatible, I = Incompatible

Table 2: Compatibility of DOW CORNING 7224 Conditioning Agent with thickeners.

Thickener	Chemical type	Concentration(s)	Compatible
Carbopol 941	Acrylic acid polymer	0.2%	No[1]
Carbopol 940	Acrylic acid polymer	0.2%	Yes[1]
Carbopol 934	Acrylic acid polymer	0.2%	Yes[1]
Natrosol 250M	Hydroxyrthyl cellulose	1%,2%,5%	No[2]
Keltrol	Xantham gum	1%	Yes
Polawax	Non-ionic self-emulsifying wax	1%,2%,5%	Yes
CMC	Carboxy methyl cellulose	1%,2%,5%	Yes
Blends :			Yes[3]
Acrysol ICS-1	Acrylic acid polymer emulsion	1%	No[2]
Natrosol 250ml	Cetylalcohol (45%)	1%,2%,5%	

Tested with 2% DOW CORNING 7224 Conditioning Agent at 40°C for 1 month.

[1] All neutralised with triethanolamine

[2] 5% compatible

[3] Neutralised with dilute sodium hydroxide

Table 3: DOW CORNING 7224 Conditioning Agent pH stability

	100% Concentration	*5% Concentration*
pH supplied 11.08 (5% dilution)	S	S
pH supplied 7.0	S	S
pH supplied 4.6	S	S

Test procedure: The samples were adjusted to the pH indicated using acetic acid and aged at room temperature.

S = Stable, no signs of creaming or oiling.

Information About *Dow Corning*® Q2-8220 Conditioning Additive

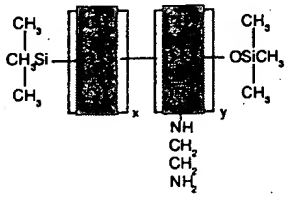
INCI/CTFA Name
Trimethylsilylamodimethicone

Physical Form
Silicone fluid

Primary Use
Conditioning additive

DESCRIPTION

Dow Corning® Q2-8220 Conditioning Additive is an amine-functional silicone polymer designed to enhance the conditioning performance of hair care products. The trimethylsilylamodimethicone is a low-viscosity fluid with a density slightly less than water. It is represented by the following molecular structure:



FEATURES

Dow Corning Q2-8220 Conditioning Additive is successfully used to formulate a variety of hair care products. Cream rinses and conditioners can be prepared by emulsifying *Dow Corning* Q2-8220 Conditioning Additive in water with a suitable thickening agent. *Dow Corning* Q2-8220 Conditioning Additive is compatible with several hair care formulation ingredients (Table I). It is also compatible with a variety of quaternary ammonium salts. *Dow Corning* Q2-8220 Conditioning Additive is very substantive to hair and improves wet and dry combing when added at 0.5 to 2 weight percent of the formulation. Performance will depend upon final formulations.

HOW TO USE

To best disperse *Dow Corning* Q2-8220 Conditioning Additive, add it at the end of the process below 50°C (122°F) with continuous mixing or stirring. Recommended use level for conditioners is up to 2 percent and up to 1 percent for styling aids.

LIMITATIONS

Dow Corning neither represents nor tests this material for medical device or pharmaceutical applications.

Dow Corning Q2-8220 Conditioning Additive is sensitive to strong acids, bases, some metallic compounds and oxidizing agents. These agents may cause polymer reversion, an increase in fluid viscosity or gelation.

Not for use in consumer spray applications.

Studies of the amino-functional silicone contained in this product indicate that laboratory rodents exhibit high inhalation toxicity when exposed to an undiluted aerosol spray.

Please refer to the Material Safety Data Sheet for additional information.

SHIPPING LIMITATIONS

None.

STORAGE AND SHELF LIFE

Shelf life information is subject to change. Refer to the Sales Specification for current shelf life information.

TYPICAL PROPERTIES

These values are not intended for use in preparing specifications.

Appearance	Clear to light haze; free from suspended matter and sediment
Color	Colorless to straw yellow
Viscosity at 25°C (77°F), cSt	145
Specific Gravity at 25°C (77°F)	0.970
Refractive Index at 25°C (77°F)	1.4065
Flash Point, open cup, °C (°F)	76 (170)
Amine Neutral Equivalent	2000

Specification Writers: Please obtain a copy of the Dow Corning Sales Specification for this product and use it as a basis for your specifications. It may be obtained from any Dow Corning Sales Office, or from Dow Corning Customer Service in Midland, MI. Call (517) 496-6000.

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Table I: Compatibility With Various Cosmetic Ingredients

Ingredient	Silicone to Ingredient Ratio 10:1	1:1	1:10
Water	I[1,2]	I[1]	I[1]
Ethanol (95%)	S	I	I
Isopropanol (99%)	S	S	S
Cyclomethicone			
Tetramer (D4)	S	S	S
Pentamer (D5)	S	S	S
Dimethicone 350 cSt	S	S	S
Propylene Glycol	I	I	I
Mineral Oil, 8 cSt	S	I	I
Mineral Oil, 67 cSt	I	I	I

[1]Easily emulsified.
[2]Key: I– Insoluble; S – Soluble.

SAFE HANDLING INFORMATION
PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED. BEFORE HANDLING, READ PRODUCT AND MATERIAL SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE MATERIAL SAFETY DATA SHEET IS AVAILABLE FROM YOUR DOW CORNING REPRESENTATIVE, OR DISTRIBUTOR, OR BY WRITING TO DOW CORNING CUSTOMER SERVICE, OR BY CALLING (517) 496-6000.

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